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ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Washington, D.C.

Subject: CONTINUOUS AIRWORTHINESS MAINTENANCE PROGRAMS

1. PURPOSE. This advisory circular provides information and guidance on continuous airworthiness maintenance programs for operators subject to the provisions of Federal Aviation Regulations (FAR) Parts 121, 127 or 135.

2. CANCELLATION. Advisory Circular AC 120-16B, dated September 14, 1978, is canceled.

3. GENERAL. Subpart L of FAR Part 121, and Subpart I of FAR Part 127, in conjunction with FAR Part 43, afford the privilege of performing maintenance, inspections, and alterations to operators subject to FAR Parts 121 and 127 and provide for their use of continuous airworthiness maintenance programs. Subpart J of Part 135 includes the same provisions for certain operators subject to Part 135 as specified in Subpart J. Concurrently, it assigns to them the responsibility for the airworthiness of the aircraft they operate and for compliance with the continuous airworthiness maintenance program approved under the operator's operations specifications. This advisory circular deals with the elements of continuous airworthiness maintenance programs and the management areas associated with those programs; namely, (1) responsibility for airworthiness; (2) maintenance and inspection organization; (3) performance and approval of maintenance and alterations; (4) arrangements for maintenance and alterations performed by other persons; and (5) continuing analysis and surveillance. The regulations concerning this subject are explicit, and the material contained in this advisory circular is not intended to change the requirements of those regulations in any way. However, there have been numerous questions as to the content and administration of continuous airworthiness maintenance programs and their application across the broad spectrum of operators subject to the provisions of FAR Parts 121, 127 and 135.

4. CONTINUOUS AIRWORTHINESS MAINTENANCE PROGRAM ELEMENTS. A continuous airworthiness maintenance program is a compilation of the individual maintenance and inspection functions utilized by an operator to fulfill its total maintenance needs. Authorization to use continuous airworthiness maintenance programs is documented by operations Specifications - Aircraft

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Maintenance, approved by the Federal Aviation Administration, for each user as provided for by FAR 121.25, 121.45, 127.13 and 135.11. These specifications prescribe the scope of the program, including limitations, and they reference manuals and other technical data as supplements to these specifications. Following are the basic elements of continuous airworthiness maintenance programs:

a. Aircraft Inspection. This element deals with the routine inspections, servicing, and tests performed on the aircraft at prescribed intervals. It includes detailed instructions and standards (or references thereto) by work forms, job cards, etc., which also serve to control the activity, and to record and account for the tasks that comprise this element.

b Scheduled Maintenance. This element concerns maintenance tasks performed at prescribed intervals. Some are accomplished concurrently with inspection tasks that are part of the inspection element and may be included on the same form. Other tasks are accomplished independently. The scheduled tasks include replacement of life-limited items, components requiring replacement for periodic overhaul, special inspections such as X-rays, checks or tests for on-condition items, lubrications, etc. Special work forms can be provided for accomplishing these tasks or they can be specified by a work order or some other document. In any case, instructions and standards for accomplishing each task should be provided to ensure its proper accomplishment and that it is recorded and signed for.

c. Unscheduled Maintenance. This element provides procedures, instructions, and standards for the accomplishment of maintenance tasks generated by the inspection and scheduled maintenance elements, pilot reports, failure analyses, or other indications of a need for maintenance. Procedures for reporting, recording, and processing inspection findings, operational malfunctions, or abnormal operations such as hard landings, are an essential part of this element. A continuous aircraft logbook can serve this purpose for occurrences and resultant corrective action between scheduled inspections. Inspection discrepancy forms are usually used for processing unscheduled maintenance tasks in conjunction with scheduled inspections. Instructions and standards for unscheduled maintenance are normally provided by the operator% technical manuals. The procedures to be followed in using these manuals and for recording and certifying unscheduled maintenance are included in the operator's procedural manual.

d Engine, Propeller, and Appliance Repair and Overhaul. This element concerns shop operations which, although they encompass scheduled and unscheduled. tasks, are remote from maintenance performed to the aircraft as a unit. As with the aircraft scheduled and unscheduled elements, instructions and standards should be provided along with means for certifying and recording the work. Appropriate life-limited parts replacement requirements are included in this element.

e. Structural Inspection Program/Airframe Overhaul. This element concerns the structural inspections identified as the D and E check level by Maintenance Review Board reports and/or airframe major overhaul. As with the aircraft

inspection program, detailed instructions and standards should be provided along with a work control and recording means. In addition to structural inspection, airframe major overhaul programs schedule extensive maintenance tasks,

f. Required Inspection Items (RII). This element concerns maintenance work items which, if improperly done or if improper parts are used, could endanger the safe operation of the aircraft. RII items appear in all elements of the operator's continuous airworthiness maintenance program, They receive the same consideration regardless of whether or not they are related to scheduled or to unscheduled tasks; i.e., the fact that an RII requirement arises at an awkward time or at an inconvenient location has no bearing on the need to accomplish it properly.

(1) There are many tasks throughout each continuous airworthiness maintenance program which, although not in the RII category, are essential to a safe, reliable, and efficient aircraft. A responsible maintenance program specifies inspection of these tasks to ensure their proper accomplishment. The operator should designate the tasks that need to be inspected as a general requirement to assure the effectiveness of their program as well as the RII items. It is not the intention of the RII requirement to cause the deletion or degradation of any inspection tasks which the operator deems necessary for proper maintenance of its aircraft.

(2) The distinction between tasks of -this nature and RII items is, again, their critical effect on airworthiness. For example, a landing gear position indicating system might be designated for inspection due to the need for that system in normal operation, whereas a retraction test conducted to check adjustment of the actuating mechanism and locks would be designated RII &cause improper adjustment might result in a heels-up landing. The operator, in determining which tasks to designate as required inspection items, should consider the importance of, but not limit its consideration to, the following:

(i) Installation, rigging, and adjustments of flight controls and surfaces,

(ii) Installation and repair of major structural components.

(iii) Installation of an aircraft engine, propeller, or rotor and overhaul or calibration of certain components; such as, engines, propellers, transmissions, and gearboxes, or navigational equipment, the failure of which would affect the safe operation of the aircraft.

(3) The operator should identify required inspection items on work forms in a suitable manner. For example, such items may be identified with the abbreviation "RII", an asterisk, or any workable method.

g. Maintenance Manuals. The operator's maintenance manual serves to define the continuous airworthiness maintenance program and to provide procedures and instructions for its use. It is comprised of three general categories: (1) policies and procedures; (2) detailed instructions for the accomplishment of the scheduled inspection program; and (3) technical manuals for maintenance standards and methods. These categories may be grouped in any usable manner.

(1) The policies and procedures segment deals with organizational matters, the policies of the maintenance section, procedures for the administration of the continuous airworthiness maintenance program, test flight requirements, and many other subjects that are peculiar to each individual operator. It is a company publication and serves as an administrative tool for directing and controlling the total maintenance function and to define all facets of the maintenance operation and their interrelationship. Quality control is a major subject of this publication.

(2) The segment of the maintenance manual system dealing with the scheduled inspection program is usually a company publication. It normally includes the work forms or job cards associated with scheduled inspections and detailed instructions (or specific references) for accomplishing the inspections. In addition, this segment usually includes forms and instructions (or references thereto) for recurring nonroutine requirements such as engine changes and abnormal landing inspections.

(3) Technical manuals concern how to accomplish specific tasks. They set forth methods, technical standards, measurements, operational tests, etc. These are usually manufacturers' publications, the applicability of which is designated by the policy and procedures manual. Technical manuals can be supplemented by the operator. It should be noted that the content of these manuals is the operator% responsibility regardless of who publishes them.

(4) The manual system should accommodate work performed for the certificate holder by other persons. The policies and procedures segment of the manual should assign responsibilities and delineate procedures for the administrative aspect of contracted work. The technical material should be arranged for the use and guidance of the contract agency. A listing of agencies under contract and a brief description of the work contracted for should be included in the manual system. In all cases the operator's manuals must clearly designate who is authorized to certify the work performed and who is authorized to execute the airworthiness release.

5. RESPONSIBILITY FOR AIRWORTHINESS.

a. FAR Section 121.363 and corresponding sections of FAR Parts 127 and 135 afford the following maintenance privileges to operators subject to these regulations:

(1) To perform maintenance, preventative maintenance, inspection, repairs and alterations on the aircraft they operate.

(2) To develop (or adopt) a continuous airworthiness maintenance program and to tailor and adjust that program and related practices and procedures to best suit the operator's need.

b. With these privileges go the overall responsibility for the effectiveness of the program and for all work performed in accordance with the program. This responsibility applies to work performed by the operator as well as work performed for the operator by other persons.

6. MAINTENANCE/INSPECTION ORGANIZATION. FAR 121.365, 127.132 and 135.423 impose organizational requirements with regard to the administration of the continuous airworthiness maintenance program. This does not mitigate the applicability of FAR 43 nor does it waive initial aircraft certification requirements. The Required Inspection Item (RII) requirement causes the operator to separate the inspection organization from the remainder of its maintenance organization to ensure proper accomplishment of RII items. This separation applies to the following functions:

a. RII items performed by the operator's organization.

b. Means to ensure RII items performed by other persons are subjected to RII inspection separation by the other person's organization and procedures.

c. Identification of RII items by a means that is understood by the person performing the work.

d. Designation of persons authorized to accomplish RII items and procedures to make them aware of that designation and of the scope of the authorization. In the case of work performed by other persons, the operator may delegate the RII function to the other person's inspection organization provided the arrangement is documented and controlled by appropriate procedures.

7. PERFORMANCE AND APPROVAL OF MAINTENANCE AND ALTERATIONS. The significant difference between operators with approved continuous airworthiness maintenance programs and other operators is that FAR 121.379, 127.140 or 135.437 establish them as maintenance entities.

a. The operator is privileged to perform maintenance on its aircraft in accordance with its continuous airworthiness maintenance program and for other operators under corresponding parts of the Federal Aviation Regulations in accordance with their programs.

b. The operator's manual prescribes the authorizations, methods, standards, and procedures for performance of that maintenance. This is recognized by FAR 43.13(c).

c. The operator% aircraft are released for service (airworthiness release, ref: FAR 121.709, 127.319 or 135.443) following maintenance by a person specifically authorized by the operator rather than by an individual or repair station on their own behalf. In effect, the person signing the release acts in the capacity of an authorized agent for the operator and is certifying the maintenance covered by the release as having been accomplished according to the operator's continuous airworthiness maintenance program. Responsibility for each step of the accomplished maintenance is borne by the person signing for that step and the airworthiness release certifies the total maintenance package. This arrangement in no way reduces the responsibility of certificated mechanics or repair stations for maintenance functions or tasks they perform or supervise. The operator is obligated to designate, by name or occupational title, each airman or organization authorized to execute the airworthiness release. In addition, the operator should designate when a release is required. Normally, a release is required following inspections prescribed by the operations specifications, maintenance activities involving RII inspections, and any other significant maintenance.

8. ARRANGEMENTS WITH OTHER PERSONS FOR MAINTENANCE. When an operator uses the services of another person to accomplish all or part of its continuous airworthiness maintenance program that person's organization becomes, in effect, an extension of the operator's organization. The operator must determine the person's capability to do the work and must provide appropriate material from its maintenance manual for that work.

a. The operator should execute contractual agreements with the persons performing its work on a continuing basis to ensure the operator's interests are met. In the case of major operations such as engine overhaul, the agreement should denote a specification for the work and that specification should be included or referenced as part of the operator's manual system.

b. There will be unplanned occasions where it will be necessary for the operator to make arrangements for maintenance away from its regular maintenance facilities. The operator may institute procedures whereby the pilot in command or other person can make on-the-spot arrangements for maintenance. However, the person performing the work should be specifically authorized by a designated person in the operator's organization for that work. The operator's procedures should outline the steps that must be taken in order for the operator to control the work performed.

9. CONTINUING ANALYSIS AND SURVEILLANCE. FAR 121.373 and similar provisions of FAR 127 and 135 require the operator to provide a system for continuing analysis and surveillance of its continuous airworthiness maintenance program including work performed according to that program by another person. This requirement, in effect, establishes a quality control or internal audit function.

a. This system should provide for timely corrective action on the following:

(1) Frequency of unscheduled parts replacement or need for unscheduled maintenance.

(2) Degree and frequency of adjustment and calibration of equipment.

(3) Changes in operational capability or reliability (delays, etc.).

b. This system should provide a continuous audit of the total maintenance system to assure that everyone connected with it is in compliance with the operator's manuals and the applicable regulations. This should include, but not be limited to, the following:

(1) All publications and work forms are current and readily available to the user.

(2) Maintenance is, in fact, performed in accordance with the methods, standards and techniques specified in the operator's manuals.

(3) Maintenance forms are screened for completeness and proper entries, and RII identification.

(4) Records pertaining to tracked components are cross-referenced to stock issue records, etc., to minimize errors.

(5) Indications of inadequate training.

(6) Airworthiness releases are executed by designated persons and in accordance with the procedures specified in the operator's manuals.

(7) Carryover items and deferred maintenance are properly handled.

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